

Claims

We claim:

1. An electret nonwoven web comprising

5 a. a continuous fiber nonwoven web;
 b. a binder composition;

wherein the binder composition is applied to the continuous fiber nonwoven web, the binder composition is cured to form a nonwoven web/binder composite, the composite is electret charged.

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2. The electret nonwoven web of claim 1, wherein the continuous fiber nonwoven web comprises a spunbond fiber nonwoven web.

15 3. The electret nonwoven web of claim 2, wherein the nonwoven web comprises

monocomponent fibers, multicomponent fibers and/or multiconstituent fibers.

20 4. The electret nonwoven web of claim 3, wherein the nonwoven web comprises multicomponent fibers.

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5. The electret nonwoven web of claim 4, wherein the multicomponent fibers comprise polypropylene as a first component and a polyethylene as a second component.

6. The electret nonwoven web of claim 1, wherein the binder composition is impregnated into the nonwoven web.

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7. The electret nonwoven web of claim 6, wherein the binder composition comprises an acrylic resin.

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8. The electret nonwoven web of claim 6, wherein the binder add-on is between 10% and 70% based on the weight of the binder and nonwoven web.

9. The electret nonwoven web of claim 8, wherein the binder add-on is between 25 to 60% by weight.

10. The electret nonwoven web of claim 4, wherein the binder composition is impregnated into interstitial spaces or void space of the nonwoven web, and the binder add-on is in the range of 25% to 60% by weight, based on the weight of the binder and nonwoven web.

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11. The electret nonwoven web of claim 1, wherein the binder composition comprises a resin which reinforces the nonwoven web.

12. A filter material having a self-supporting pleat comprising an electret nonwoven web

10 wherein the electret nonwoven web comprises

a. a continuous fiber nonwoven web;

b. a binder composition;

wherein the binder composition is applied to the continuous fiber nonwoven web, the binder composition is cured to form a nonwoven web/binder composite, the composite is

15 electret charged and pleated.

13. The filter material of claim 12, wherein the continuous fiber nonwoven web comprises a spunbond fiber nonwoven web.

20 14. The filter material of claim 13, wherein the nonwoven web comprises monocomponent fibers, multicomponent fibers and/or multiconstituent fibers.

15. The filter material of claim 14, wherein the nonwoven web comprises multicomponent fibers.

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16. The filter material of claim 15, wherein the multicomponent fibers comprise polypropylene as a first component and a polyethylene as a second component.

17. The filter material of claim 12, wherein the binder composition is impregnated into the

30 nonwoven web.

18. The filter material of claim 17, wherein the binder composition comprises an acrylic resin.

19. The filter material of claim 17, wherein the resin add-on is between 10% and 70% based on the weight of the binder and nonwoven web.

20. The filter material of claim 19, wherein the binder composition add-on is between 25
5 to 60% by weight.

21. The filter material of claim 15, wherein the binder composition is impregnated into interstitial spaces or void space of the nonwoven web, and the binder add-on is in the range of 25% to 60% by weight, based on the weight of the binder and nonwoven web.
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22. The filter material of claim 12, wherein the binder composition comprises a resin which reinforces the nonwoven web.

23. The filter material of claim 12, wherein the composite exhibits a yield stress at strains of less than 10% in bending mode such that the bent or folded composite exhibit little or no plastic recovery.
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24. A process of forming an electret charged nonwoven web comprising
a. providing a nonwoven web of continuous fibers;
20 b. applying a binder composition to the nonwoven web;
c. curing the binder composition to form a nonwoven/binder composite material;
d. electret charging the composite.

25. The process of claim 24, wherein the binder composition is impregnated into the
25 nonwoven web.

26. A process of forming a filter material with a self-supporting pleat from a nonwoven comprising
a. providing a nonwoven web of continuous fibers;
30 b. applying a binder composition to the nonwoven web;
c. curing the binder composition to form a nonwoven/binder composite;
d. electret charging the composite to form an electret charged composite; and
e. pleating the electret charged composite.

27. The process of claim 26, wherein the binder composition is impregnated into the nonwoven web.